BATTERIES (LEAD - ACID)

HAZARDS & RULES

Base Materials - Hazards & Impacts

As the name implies, lead-acid batteries contain both lead and acid (sulfuric acid). Each of these materials has its own hazard and impact. Lead can enter the body by ingestion (this usually occurs when putting hands or other objects contaminated with lead dust into the mouth) or by breathing lead dust. The effects of lead on the adult body include the following: problems with reproduction, digestion, and with memory and concentration; high blood pressure; nerve disorders; and muscle and joint pain. Lead is even more dangerous to children because their bodies are more sensitive to lead's effects and because their bodies absorb more lead than do adults' bodies.

The electrolyte (battery acid) in a typical lead-acid battery contains approximately 60% water and 40% sulfuric acid. Sulfuric acid is a corrosive material that can cause harm to the body upon physical contact or through the inhalation of vapors or mists. When sulfuric acid comes in contact with flesh, it burns the skin, leaving a black charred carbon residue in place of living tissue. Contact with large areas of flesh can result in shock and, possibly, death. Repeated or prolonged exposure to vapors or mists can cause inflammation of the upper respiratory tract, potentially leading to serious lung and bronchial damage.

Sulfuric acid is also a hazard due to reactivity. Sulfuric acid can react with other chemicals, generating enough heat to ignite ordinary combustible materials. Many types of metals are easily dissolved by sulfuric acid, resulting in a release of hydrogen, which is extremely flammable. In addition to reactivity, sulfuric acid can also feed an existing fire by releasing oxygen, which acts as a fuel to fire.

Additives and Contaminants - Hazards & Impacts

The electrolyte in spent lead-acid batteries may contain up to 70 times the amount of lead found in the electrolyte of new batteries. Therefore, exposure to electrolyte from spent lead-acid batteries presents a greater hazard to health and the environment. If the spent lead-acid batteries are disposed in a landfill or illegally dumped, they may release lead and lead-contaminated sulfuric acid into the environment. This can pollute drinking water sources such as lakes, rivers, streams and ground water. If lead-acid batteries are burned in incinerators, lead can remain in the ash and be released into the air.

Regulatory Overview

IDEM requires that shops recycle their used lead-acid batteries. If your shop sells batteries, you must post a sign informing customers of your requirement to accept their used batteries for recycling. IDEM also requires that you properly store your used batteries. In addition to IDEM's regulations, OSHA regulates the storage and servicing of batteries, and DOT regulates transportation.

MANAGEMENT RESPONSIBILITIES

Listed below are the requirements pertaining to the sale and disposal of batteries as well as the requirements that you must follow to ensure that your batteries are properly serviced, stored, and recycled. Also listed are suggested practices that you should follow to ease your regulatory requirements and improve the environmental health of your shop.

You Must:

- if you sell batteries, you must post a sign in a location that is conspicuous to your customers. The sign must be at least 8.5" wide by 11" high and the lettering must be at least 18-point type. (The sign included at the end of this section can be used to meet this Indiana Code requirement.) The written notice must indicate the following:

> **Recycle your used batteries.**
> **Improper disposal of batteries is against the law.**
>
> **It is illegal to put used motor vehicle batteries or other vehicle or boat batteries in the trash.**
>
> **State law requires us to accept your used battery for recycling if you purchase a new battery from us.**

- if your shop changes or charges batteries, you must: [OSHA]
  - charge batteries only in areas designated for that purpose.
  - ensure that materials needed to flush and neutralize spilled electrolyte (i.e., a hose and baking soda) are readily available.
  - ensure the reinstalled batteries are properly positioned and secured in the vehicle.
  - provide a carboy tilter or siphon to employees who handle electrolyte.
  - ensure that vehicles are properly positioned with the brake applied before attempting to change or charge batteries.
  - ensure that the batteries' vent caps are functioning. Open the battery or compartment cover to dissipate heat.
  - prohibit smoking in the battery charging area.
  - take precautions to prevent open flames, sparks, or electric arcs in battery charging areas.
  - keep tools and other metallic objects away from the top of uncovered batteries.
  - provide suitable facilities within the work area for emergency drenching or flushing of the eyes and body.
- if your shop stores batteries, you must ensure that the storage area is sufficiently ventilated to prevent the accumulation of explosive mixtures of gases. [OSHA]
- ensure that your used batteries are properly managed and recycled by doing the following:

- properly store all spent lead-acid batteries in an area with secondary containment or in an area that provides a means to control and contain any battery acid spillage. If batteries are stored outdoors, the storage-area must be curbed to contain leaks, and covered to prevent snow and rain from entering.
- within 90 days from the date you receive the spent lead-acid battery, the battery must be transferred:
  - back to the wholesaler;
  - to a facility that collects lead acid batteries for delivery to a recycling facility; or
  - to an IDEM-permitted secondary lead smelter (if sent to a secondary lead smelter in Indiana.)
- when transporting used batteries that are not cracked or leaking, label them as follows depending on the type of batteries you are transporting: [DOT]

- - TYPICAL DESCRIPTIONS FOR COMMONLY USED BATTERIES- -

"Battery, wet, filled with acid, 8, UN2794, PGIII, Corrosive"

or

"Battery, wet, non-spillable, 8, UN2800, PGIII, Corrosive"

- when transporting batteries that are cracked and/or leaking, label them as follows: [DOT]
  - "Battery fluid, acid, 8, UN2796, PGII, Corrosive"
- if you dispose of spilled battery acid as a hazardous waste, follow the storage and disposal requirements listed in Chapter 3, and label the waste as follows to meet DOT requirements:
  - "Sulfuric acid, spent, 8, UN1832, PGII, D002"

You Should:

- request documentation from your transporter confirming that your batteries were delivered to permitted lead-acid battery recycling facility. It is your responsibility to ensure that your batteries are recycled. If the transporter improperly disposes of your batteries, you can be held financially responsible for the clean up costs resulting from the improper disposal.
- store all lead-acid batteries on an impermeable surface such as coated concrete or asphalt.

You Should Consider:

- requiring your customers to pay a **refundable** deposit on all batteries purchased. This deposit is intended to encourage customers to bring their spent battery back to your facility for recycling.
- storing your used batteries on a wire shelf and installing polyethylene spill trays **below** the shelf to catch any spilled acid.

BACKGROUND ON OPTIONS TO CONSIDER

Storing batteries on a wire shelf with plastic spill trays placed below the shelf will allow you to easily inspect all batteries for damage and to contain any leaking battery acid. By storing your batteries in this manner, you can readily determine which battery is leaking and can properly neutralize the acid.

Recycle your used batteries.

Improper disposal of batteries is against the law.

It is illegal to put used motor vehicle batteries or other vehicle or boat batteries in the trash.

State law requires us to accept your used battery for Recycling if you purchase a new battery from us

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IC 13-20-16-1